Small Business Innovation Research/Small Business Tech Transfer

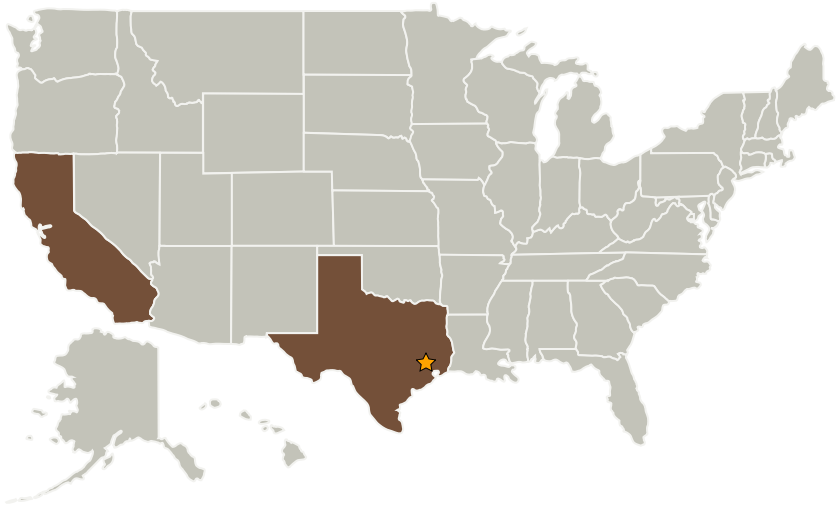
Nitrous Oxide Fuel Blend-Continuous Operation Lunar Thruster (NOFB-COLT), Phase I

Completed Technology Project (2008 - 2008)

Project Introduction

We propose conducting further development for a Nitrous Oxide Fuel Blend (NOFB) propulsion system. Phase I activities will concentrate on a revising a previous 5 lbf thruster to facilitate continuous operation with repeated restart. The thruster will utilize a novel new NOFB monopropellant. NOFB series monopropellant formulations have the following characteristics: 1) Non-toxic and readily manufacturable; 2) Vacuum specific impulse of 310+s (compared to monopropellant hydrazine's 235s); 3) Space-storable with wide temperature storage limits from <-77 C to >100 C; 4) High storage density at equivalent to twice as dense as monopropellant hydrazine depending on temperature; 5) Potentially highly throttleable due to very fast reaction kinetics; and 6) Self-pressurizing thereby simplifying the overall feed system architecture and reliability. Due to these desirable characteristics of NOFB monopropellants, Phase I funding is requested from the NASA SBIR program.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Firestar Engineering, LLC	Supporting Organization	Industry	Mojave, California

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Nitrous Oxide Fuel Blend-Continuous Operation Lunar Thruster (NOFB-COLT), Phase I

Completed Technology Project (2008 - 2008)

Primary U.S. Work Locations	
California	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

David Y Fisher

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.1 Chemical Space Propulsion
    - TX01.1.5 Hybrids